

Requested Patent: GB277760A

Title: IMPROVEMENTS IN OR RELATING TO ARTIFICIAL LEGS ;

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Equivalents: ;

ABSTRACT:

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in or relating to Artificial Legs.

I, PETER MURRAY McKAY, of 223, Blackfriars Road, London, S.E. 1, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises improvements in or relating to artificial legs. It is an object of the invention to provide an ankle-joint for an artificial leg which, while light in construction, is of adequate strength to withstand the peculiarly severe and repeated stresses to which the parts of such a joint are subject. One of the principal difficulties in designing a satisfactory ankle-joint is to devise such an attachment of the bucket of the lower leg at the joint that the stresses, necessarily concentrated at the joint-pin, are properly distributed to the bucket without overstressing the metal at any point and yet without the employment of such a thickness of metal as would involve undue weight.

According to the present invention there is provided in an ankle-joint for an artificial leg the combination with a foot and an ankle-joint pin supported thereby of a wrought sheet metal bearing-plate the underside of which rests upon the ankle-joint pin and which is provided with an integral upstanding peripheral flange for attachment to a leg-bucket. This construction has the advantage that the bearing-plate is continuous over the ankle-joint pin and does not have to be cut away for the passage of the pin or associated parts, except so far as may be necessary for the passage of bolts or studs. At the same time the bearing-plate with its peripheral flange forms a very stiff element which satisfactorily resists the bending effort produced by the pressure of the ankle-joint pin at its centre and distributes this

pressure uniformly all round the base of the bucket.

Preferably the bearing-plate and flanges which are made of wrought sheet metal are in a single piece and the underside of the bearing-plate is pressed into the form of a recess to fit the ankle-joint pin. Furthermore it is desirable that the peripheral flange should conform to the normal shape of the bottom of the leg-bucket and be provided with an upward extension at the front and/or back to lie against the bucket at these parts and be secured thereto. The effect of the extensions is to stiffen the material of the bucket and help to prevent any tendency to buckle which is sometimes found, due to the great forces to which the bucket is liable to be subjected and to the fact that it is of smallest diameter just above the ankle.

The accompanying drawing illustrates one form of the invention by way of example, and in the drawing

Figure 1 is a vertical central section through an ankle-joint, and

Figure 2 is a perspective view of the bearing-plate.

In the drawing, the foot portion 10 is connected to a lower leg portion 11 by an interposed ankle-joint pin 12. The ankle-joint pin 12 rests upon a leather seating 13 and carries at its centre a grooved brass saddle 14 which fits a staple 15 the two arms of which are bolted by nuts 16, 17 to the foot portion 10. This construction holds the ankle-joint pin 12 firmly against the leather bearings 13 and allows it to rock thereon silently and without play, but without undue friction.

A bearing-plate 18, shown in detail in Figure 2, is provided to rest upon the ankle-joint pin 12. At the centre the bearing-plate (which is made of wrought steel) is pressed upwardly, as shown at 19, to provide a recess 20 on the under-

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side, which recess fits the pin. At 21 the bearing-plate is further bulged upwardly to clear the staple 15. The bearing-plate is bolted to the pin by two studs 22 and carrying-nuts 23. The stresses produced by these studs are distributed on to the thin metal of the bearing-plate by an interposed block 24 which for lightness is preferably made of some alloy such as that sold under the registered trade mark "Duralumin". The bearing-plate is provided with an upstanding flange 25 around its periphery, the contour of this flange being such that it will fit closely within the bottom of the lower leg-bucket 11. The lower leg-bucket 11 is made of sheet metal and is rivetted to the flange 25. An upward extension 26 of the flange 25 is provided in front to lie along the inside of the shin of the leg. The extension is rivetted to the shin of the bucket 11 and stiffens it to a sufficient height to obviate any risk of buckling at the shin. A similar but shorter extension 27 is provided at the back of the leg and is similarly rivetted to the inside of the bucket at the back. The angles formed by the junctions of the upward extensions 26 with the horizontal portions of the flanges 25 are well rounded, as indicated at 28, to ensure that the stresses are effectively distributed at these points.

The bearing-plate 18 is bulged upwardly at 29 to form a recess which coacts with a rubber buffer 30 in the heel of the foot. A further buffer 31 is provided in front of the ankle-joint pin 12 and the foot is free to oscillate within the limits of movement imposed by these two buffers.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In an ankle-joint for an artificial leg the combination with a foot and an

ankle-joint pin supported thereby of a wrought sheet metal bearing-plate the underside of which rests upon the ankle-joint pin and which is provided with an integral upstanding peripheral flange for attachment to a leg-bucket. 50

2. An ankle-joint for an artificial leg as claimed in Claim 1, wherein the bearing-plate extends in a continuous surface from the flange at the front over the ankle-joint pin to the flange at the rear for the purpose described. 55 60

3. An ankle-joint for an artificial leg as claimed in Claim 1 or Claim 2 wherein the underside of the bearing-plate is pressed into the form of a recess to fit the ankle-joint pin. 65

4. An ankle-joint for an artificial leg as claimed in Claim 1 or Claim 2 wherein the peripheral flange conforms to the normal shape of the bottom of the leg-bucket and is provided with an upward extension at the front and/or back to lie against the bucket at these parts and be secured thereto for the purpose described. 70

5. An ankle-joint for an artificial leg as claimed in any one of the preceding claims wherein the bearing-plate is secured to the ankle-joint pin to turn therewith by means of bolts or studs and is strengthened for this purpose by a block interposed between the nuts or heads of the bolts or studs and the bearing-plate to distribute the stresses produced by the bolts or studs. 75 80

6. A bearing-plate of wrought sheet metal for the ankle-joint of an artificial leg substantially as illustrated in the accompanying drawing. 85

7. An ankle-joint for an artificial leg substantially as described with reference to the accompanying drawing. 90

Dated this 25th day of June, 1926.

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Chartered Patent Agents. 95

[This Drawing is a reproduction of the Original on a reduced scale.]

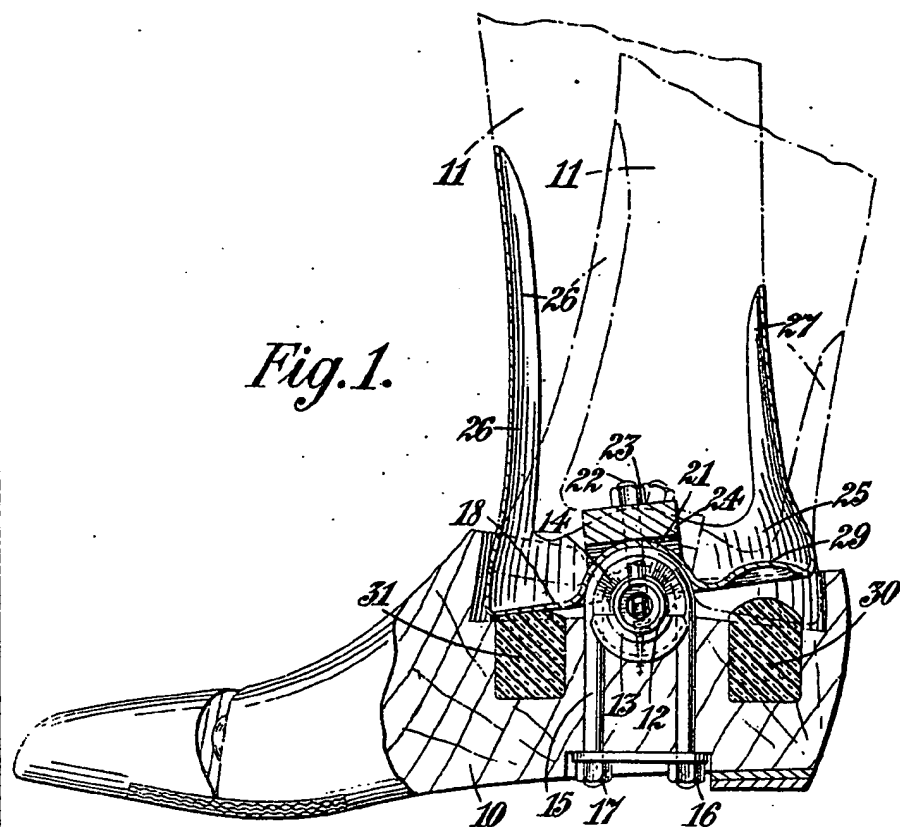


Fig. 2.

